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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,326	10/14/2005	Liang-Chy Chien	KENT-B-PCT-US	1171
7590 Hudak Shunk & Farine Co Suite 307 2020 Front Street, Cuyahoga Falls, OH 44221				
08/04/2009				
EXAMINER				
DUONG, TAI V				
ART UNIT		PAPER NUMBER		
2871				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/553,326

Applicant(s)

CHIEN ET AL.

Examiner

TAI DUONG

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 51-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 51-61 is/are allowed.
- 6) ☒ Claim(s) 1,2,11,13 and 20 is/are rejected.
- 7) ☒ Claim(s) 3-10,12,15-19,21 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

The rejection of claims 4, 5, 7, 12, 18 and 21 under 35 U.S.C. 112 is withdrawn in view of the amendments to the claims.

The rejections of claims 1-7 and 9-22 over JP 07-056172, Valentian, Sprokel and Chaudhari et al are withdrawn in view of the amendments to claims and Applicant's remarks.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Callegari et al (US 6,020,946).

Note Figs. 1-3 which identically disclose the claimed process for preparing an aligning substrate for liquid crystals, comprising the steps of providing an aligning substrate (20A, 20B) comprising an aligning film; and bombarding at least a portion of the substrate 20 with a plasma beam from a plasma beam source at an incident angle of 20 degrees to about 80 degrees thereby inducing a surface anisotropy producing an aligning direction on the bombarded portion of the aligning substrate, wherein 0 degree is a position normal to the substrate. The aligning film comprises hydrogenated diamond-like carbon (DLC); the liquid crystal cell comprises nematic liquid crystals or thermotropic liquid crystals; and a mask 66 is placed onto the substrate prior to the bombarding (col. 4, line 13 – col. 8, line 27). It is noted that the surface anisotropy is inherently associated with the bombarded portion of the aligning substrate for aligning

the liquid crystal molecules in the preferred direction. See U.S. 6,124,914 (col. 1, lines 38-63).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Callegari et al (US 6,020,946) in view of Valentian (US 5,945,781) of record.

The only difference between the process of Callegari et al and that of the instant claims is the plasma beam source being a closed drift thruster. Valentian discloses that it was known to employ a closed drift thruster as the plasma beam source (col. 1, lines 5-33). Thus, it would have been obvious to a person of ordinary skill in the art in view of Valentian to employ in the process of Callegari et al a closed drift thruster as the plasma beam source with low ion energy, as compared with ion bombardment thruster.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Callegari et al (US 6,020,946) in view of Sprokel (US 4,261,650).

The only difference between the process of Callegari et al and that of the instant claim is the aligning substrate being positioned at a distance of about 5 to about 50 cm from the plasma beam source. Sprokel discloses that the distance between the substrate and the plasma beam source (the ground electrode 42) is a compromise; etching and deposition rates increase as this distance is made shorter, but the effect of the deposition angle decreases (col. 3, lines 34-37). Thus, it would have been obvious

to a person of ordinary skill in the art in view of Sprokel to position the aligning substrate at a distance of about 5 to about 50 cm from the plasma beam source for optimizing either the desired deposition rate or the desired deposition angle.

Claims 3-10, 12 and 14-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 3 is allowed over the prior art of record. None of the prior art discloses or suggests a process for preparing an aligning substrate for liquid crystals having the combination which includes the steps recited in claim 2 and the feature " wherein current density of the plasma beam is about 0.1 to about 1000 .mu.A/cm.sup.2, and wherein the ion energy is from about 100 to about 5000 eV". Also, see Applicant's argument on page 11 of the Remarks.

Claims 4-10, 12, 14, 16, 18 and 19 are also allowed since they depend on claim 3.

Claim 15 is allowed over the prior art of record. None of the prior art discloses or suggests a process for preparing an aligning substrate for liquid crystals having the combination which includes the steps recited in claim 2 and the feature "wherein the plasma beam is in the form of a sheet".

Claim 17 is allowed over the prior art of record. None of the prior art discloses or suggests a process for preparing an aligning substrate for liquid crystals having the combination which includes the steps recited in claim 2 and the feature "further including the step of moving the aligning substrate through a path of the plasma beam".

Claim 51 is also allowed over the prior art because claim 51 is the combination of claims 1- 3 and 6. Claims 52 -61 are also allowed since they depend on claim 50.

With respect to Applicant's remarks regarding claim 2, the substitute of a closed drift thruster as the plasma beam source in the process of Callegari et al would have been obvious to a person of ordinary skill in the art because of the advantages of using a closed drift thruster, e.g. plasma beam source with low ion energy.

With respect to Applicant's remarks regarding claim 20, positioning the aligning substrate at a distance of about 5 to about 50 cm from the plasma beam source would have been obvious to a person of ordinary skill in the art because the above-mentioned range can be determined or optimized through routine experimentation.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Tai Duong at telephone number (571) 272-2291.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787.

/TD/

/Dung Nguyen/
Primary Examiner, Art Unit 2871

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